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OUR EXPERIENCE IN THE TREATMENT OF
THERMAL BURNS

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OUR EXPERIENCE IN THE TREATMENT OF THERMAL BURNS

Following is the translation of an article by P. I. Khel'ben entitled "Nash Opyt Lecheniya Termicheskikh Ozhogov" (English version above) in Khirurgiya (Surgery), Vol. 36, No. 5, 1960, pages 85-87.

From the surgical division (Head -- P. I. Khel'ben) of the medico-sanitary section (Chief -- M. I. Laykevich) of the Kuybyshev Oil-Refining Plant.

There are no disagreements among surgeons in the choice of general methods of treating burns; almost all use morphine, novocaine blockade, massive transfusions of plasma, blood, and blood-substitute liquids, penicillin therapy. The local treatment of burns has partisans of the open, closed, and semi-open (lotions) method.

I. S. Kolesnikov and T. T. Ar'yev consider that these methods should not be placed in opposition to each other, since they have their indications and contraindications.

We have used the closed method of treatment in 79% of burned individuals and the open method, in only 21%, predominantly in the presence of burns of the face. Our observations embrace 245 burned individuals who were found under treatment at the hospital of the surgical division of the medico-sanitary section of the Kuybyshev Oil-Refining Plant from 1951 to 1958. Production burns amounted to 43.26% and burns suffered in the course of daily life, to 56.74%. 142 of the individuals were men, 103 were women. Thanks to the prophylactic measures and sanitary-educational work from 1955 on, the quantity of burns, particularly of production burns, was sharply lowered. Among the causes which evoked burns were: flame (48.14%), boiling water (27.74%), hot food (10.66%), steam and other causes (13.46%). Flame burns gave a more severe clinical course than the burns evoked by the other thermal factors. We have adhered to the generally accepted division of burns into three degrees (Hildanus and Boyer). The measurement of the dimensions of the surface of the burn was conducted according to the method of B. N. Postnikov. In spite of the discussions conducted among the population concerning the rules

rendering first aid in the presence of burns, in the cases of 21.03% of those admitted, first aid had not been rendered and bandages had not even been applied. Only at the health point of the factory were aseptic bandages or sterile sheets applied to all victims, and morphine or pantopon administered subcutaneously. All victims reached the hospital in the first hour after thermal trauma, and only three from the region reached the hospital after nine hours. Ten patients had first degree burns, 200 patients had second degree burns, and 35 patients had third degree burns. The primary treatment was conducted in the bandaging room without narcosis, after the subcutaneous administration of one ml of a one percent solution of morphine. Antitetanus serum was administered to all burned individuals (1,500 - 3,000 antitoxin units).

We conducted the primary treatment of the burn according to the following method: the burned surface was irrigated from a syringe with a one per cent novocaine solution, a one per cent alcoholic solution of methylene blue or brilliant green was painted on, embracing the surrounding healthy skin; the scraps of epidermis were removed, incisions were made in the blisters, after which a bandage with a 10% solution of syntomycin emulsion was applied. We treated burns of the face by the open method, painting the burn surface for the first two days with a one per cent solution of methylene blue, and from the third day -- with a streptocidal ointment or a syntomycin emulsion. Penicillin therapy was performed for all the burned individuals.

In the secondary treatment of the burn we used hemo-bandages or a solution of rivanol (1:1,000).

In the presence of third degree burns we conducted the usual treatment, and waited for the tearing off of the scab or removed it, after which on the 30th day we performed the free transplantation of skin in accordance with the Dzhanelidze method or the Al'glava-Pyaset'skiy method in the Krikent modification. Transplantation of skin was used in 24 of the burned individuals with favorable results, covering 800-1,625 square cm of the burn surface, and in two cases we used donor skin (homotransplant) and did not perceive any advantages of it over autotransplantation. The outcomes of treatment are presented in Tables 1 and 2.

The length of treatment amounted on the average to 4.4 bed-days in the presence of first degree burns, to 13.6 bed-days with second degree burns, and to 65.5 bed-days with third degree burns.

If 10 years ago Yu. Yu. Dzhanelidze classified more than 41% of victims with a surface burn in the group of fatally burned and 26 of his patients died, now at the present time, thanks to the use of modern methods of treating burn disease

not only in the large clinical institutions, but also in the peripheral hospitals more than half of this group of extraordinarily severely burned individuals are successfully saved.

Table 1

Results of the treatment depending on the dimensions of the injury

Area of the burn in relation to the total body surface (in %)	Number of patients	Of which the following numbers		Percent mortality	
		Recovered	Died	Our Data	According to B. N. Postinakov
Up to 10	135	135	-	-	0.4
From 11 to 20	60	60	-	-	1.2
From 21 to 30	25	24	1	-	4.8
From 31 to 41	17	16	1	-	41.2
From 41 to 50	6	4	2	-	27.3
From 51 to 75	2	2	-	-	42.9
Total	245	241	4	1.6	1.7 (per 1,388 persons)

Table 2

Outcome of treatment	Number of patients	In %
Smooth recovery	213	86.91
Contractures	16	6.54
Keloidal scar	9	3.69
Trophic ulcers	3	1.23
Lethal outcome	4	1.63

Patient R., 17 years old, admitted 2 January 1953 with a flame burn with injury, predominantly of the third degree, of 59.27% of the surface of the skin. In the course of two months there was toxemia, sepsis, body temperature 39-40°, delirious state. The first 20 days treatment was by the open method under a shell, and then the closed method of treatment was used. Eighteen liters of plasma and 6.4 liters of blood were transfused to the patient; penicillin therapy was conducted. In the patient, the external ears, the soft coverings of the head, the skin of the extremities, necrotized and fell off. Transplantation of the skin by the Dzhanelidze method

was twice performed with excellent results. On 29 April 1954 he was discharged on account of recovery.

In conclusion it should be noted, that the results of burn disease, independently of the general treatment, to a considerable extent depend on the primary treatment of the burn and on early skin transplantation. The closed method of treatment with the use of syntomycin emulsion with rare bandages (once in seven to 10 days) gave the very best results with an average length of treatment of 20.7 bed-days and 1.6% mortality.

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